Why Are There No Cryptozoological Insects?

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I probably shouldn't admit it, but I find cryptozoology, with its Bigfoot and Loch Ness Monster stories, oddly fascinating. As a youngster, I believed in each and every cryptid (the word for the sort of animals that cryptozoologists seek) with great fervor. Later—embarrassingly later, as a graduate student—I admitted to myself that these creatures are generally the stuff of folklore, not biology. At the time, it never occurred to me to ask why all of the great cryptids are vertebrates, and "higher" vertebrates as well. Entomologists rule when it comes to finding new species, so why are there no insects in the cryptozoology books?

Of course, I could point out that the Cryptidae was, in the 1800s, considered by some to be a family of ichneumonoid wasps, and is now treated as a subfamily, the Cryptinae. It includes many thousands of species, and new examples are being described all the time. But that would be cheating. As social constructs, cryptids have at least the following essential features. They are animals that 1) "should be extinct." They are also 2) scary, giving stories of encounters with them a certain exciting appeal, and 3) sneaky and hard to find. They are usually also 4) treated with contempt by closed-minded scientists, who are somehow unimpressed by the evidence, which 5) generally consists of eyewitness accounts from "good honest people," and perhaps tracks or blurry photographs.

There is, however, one obscure insect cryptid. A recent blog by a cryptozoologist named Oll Lewis states; "I actually saw a giant dragonfly nearly 10 years ago and reported my sighting to an entomology professor at the university I was studying at the time who was quite adamant that I must have been mistaken." Those darned entomologists! Mind you, this still isn't a very convincing example, since Mr. Lewis seems to be more or less alone here. Perhaps I should add a sixth characteristic to my definition of cryptids: 6) lots of people zealously believe in them.

Then there's the notion that there are still trilobites living today. Google this subject and you'll find the true believers. You will also see the need for courses in invertebrate zoology. One oddball website blithely states that horseshoe crabs, tadpole shrimp, and large marine isopods "clearly fall into the category of Trilobita" (Omniology undated). Thankfully, I easily found an informative website that debunks these "trilobite imposters" (Gon 2007). Living trilobite believers are generally creationists, it turns out, and a short but fascinating history of trilobite belief and creationism (Ritterbush 2004) outlines how this phenomenon has gone well beyond the original conviction that extinction is impossible because it implies imperfection in the Creation.

The more I observe cryptozoologists, the more I recognize an anti-evolutionary theme in many of their beliefs. For some, it is an anti-academic stance, but few are anti-scientific, since they crave the prestige of science in order to vindicate their claims. These motives are easiest to spot when they complain that their favorite cryptid "should be extinct according to the scientific establishment." As evolutionary biologists, we don't actually think that way, or at least I don't. I see extinction not as a process, but as the absence of process and the failure of reproduction and survival as environments change. Some theories predict extinction in a stochastic sense (e.g., island biogeography) but whether or not a particular lineage goes extinct in a given time period is not at all important to the overall theory of organic evolution. We have no theoretical stake in such things.

In my last column, I focused on the notion of metaphorical frames in everyday thought, and I think that metaphors make a big contribution to the way we think about evolution. According to the cognitive sciences, the mind does not think using brute force computation; it needs to be more efficient. Instead, it uses shortcuts, and these often take the form of metaphors, which overlap and intertwine subconsciously, allowing lightning-fast valuations, but deeply challenging the notion that the human mind is a cool, rational instrument of logic. For example, the idea that evolution *should have* forced some species to go extinct is an application of the metaphor Lakoff and Turner (1989) call "events are actions," and it is not part of the theory of evolution (events are not always actions, and if extinction events are not mandated by an evolutionary process, then they too are not actions).

As a biologist, my initial reaction to the metaphor theory was that anyone can

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imagine any metaphors they wish when contemplating the workings of other people's minds, but the more I use the concept, the more I'm convinced of its value. These are more than just words, they are thoughts, and I'm excited by the possibility that this is something more meaningful than the usual sort of deconstructionism; it is an application of the empirical findings of a fellow branch of science. When you think about it, the "tree" of life is clearly a metaphor, so is the "mechanism" of natural selection. It is also natural to think of evolution as design, and the evolutionary process as a designer, even if you don't imagine a deity at the controls. Richard Dawkins used such a metaphor when he coined "blind watchmaker." If evolution is an agent of design, then that agent is given a personality by default. To creationists, evolution is clearly a capricious jerk, not only blind, but also purposeless and, most importantly, heartless. To evolutionary biologists, it is emotionally neutral, although creative, a combination that appears somewhat psychotic unless you recognize it as a personification—an unwise extension of the metaphor that evolution is a designer.

It's my opinion that many cryptozoologists are hooked on the notion that evolution *intended* to replace the old with the new, as an extension of the "events are actions" metaphor. Think of a car manufacturer, whose new models displace the old. Cryptozoologists think they have found a dealer who sells brand-new Studebakers, and they think that this disproves something (which, I suppose, it might, in the world of cars). Why, then, don't cryptozoologists notice that evolutionary biologists are perfectly comfortable with the existence of diverse "primitive" organisms today?

Well, perhaps there is a second metaphor at work here that sees evolution as a designer who, over time, has "set the stage" for the emergence of humans—a set designer. Think of the tree of life, whose mighty trunk supports (sets the stage for) the topmost branches (even if the "real" tree of life is made up of nothing but the topmost branches). With this in mind, consider how we tell the story of the history of life in books and museum exhibits. We focus on the idea of progress, and we give starring roles only to large, "advanced," and "dominant" (i.e. commonly fossilized) organisms throughout geological time.

It is no coincidence that the stars (yet another metaphor—go back and count how many I have used here) of the standard story of life on Earth are also the stars of cryptozoology. As bigger and smarter creatures appear in the fossil record, all of the others are relegated, unless they go extinct, to the background (literally), in both paleontological art and museum dioramas. "Setting the stage" is, after all, the same thing as creating the background, isn't it? Invertebrates show up in the foreground only in the Paleozoic, with starring roles by trilobites, eurypterids, and giant *Meganeura* dragonflies.

No matter how you look at it, these are tortoise beetle larvae (*Physonota alutacea*), not living trilobites.

After the emergence of amphibians on land, invertebrates move to the background, and are no longer part of the ongoing "development" of life. They are part of the environment, and as Timothy Morton writes in *Ecology Without Nature*, the biggest problem with discussing the environment is that "when you mention the environment, you bring it into the foreground. In other words, it stops being the environment" (Morton 2007). Perhaps this explains the vertebrate bias in biology that so many of us struggle against—the idea that insects play only generic roles such as food, pollinators, or protein, and are not full-status organisms.

So why are there no mythical, semi-undiscovered insects? Because cryptozoology is motivated, at least in part, by the need to disprove a version of evolution in which insects don't really count for much. Of course, entomologists know that insects have been continually important, at least since the Carboniferous, and even their oldest designs are still producing new models. The story of life is so immense and detailed that it has no stars—each and every lineage has a tale worth telling, and each and every insect is a well-adapted survivor after billions of years of life on Earth. As for those cryptozoologists who have no beef with evolution, let's hope they hop the fence and become entomologists. We have plenty of adventure and discovery to offer and, at least on the topic of evolution, a lot less metaphorical baggage to contend with (oops, I wrote "baggage," didn't I?).

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